26 Feb 03

20030173 40

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 March 2002 (21.03.2002)

PCT

(10) International Publication Number
WO 02/023616 A1

(51) International Patent Classification[7]: H01L 21/44, 21/31, 21/469

(21) International Application Number: PCT/US01/29173

(22) International Filing Date:
18 September 2001 (18.09.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/233,587 18 September 2000 (18.09.2000) US

(71) Applicant *(for all designated States except US)*: **ACM RESEARCH, INC.** [US/US]; Suite 610, 46520 Fremont Boulevard, Fremont, CA 94538 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **WANG, Hui** [CN/US]; 38855 Litchfield Court, Fremont, CA 94536 (US).

(74) Agents: **YIM, Peter, J.** et al.; Morrison & Foerster LLP, 425 Market Street, San Francisco, CA 94105-2482 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(48) Date of publication of this corrected version:
11 July 2002

(15) Information about Correction:
see PCT Gazette No. 28/2002 of 11 July 2002, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

162162

ACTION

WO 02/023616 A1

(54) Title: INTEGRATING METAL WITH ULTRA LOW-K DIELECTRICS

(57) Abstract: In forming a layer of a semiconductor wafer (100), a dielectric layer is deposited on the semiconductor wafer. The dielectric layer (208) includes material having a low dielectric constant. Recessed (210) and non-recessed (211) areas are formed in the dielectric layer. A metal layer is deposited on the dielectric layer to fill the recessed areas and cover the non-recessed areas. The metal layer is then electropolished to remove the metal layer covering the non-recessed areas while maintaining the metal layer in the recessed areas.